DOCUMENT RESUME

ED 159 342 CE 016 668

TITLE	Fire Service Training. Rescue Practices. (Revised).
INSTITUTION	North Carolina State Dept. of Community Colleges, Raleigh.
REPORT NO	FIP-3020
PUB DATE	Jun 74
NOTE	23p.; Several pages in this document may not reproduce well because of faint print; The manual for this unit is available from International Fire Service Training Association, Fire Protection Publications, Oklahoma State University, Stillwater, Oklahoma 74074 ($3.50) ; For related documents see CE 016 662-675
EDRS PRICE	MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS	Course Content; Educational Programs; Fire Fighters; Fire Protection; *Fire Science Education; Instructional Materials; *Job Skills; *Rescue; *Safety Education

ABSTRACT

One of a set of fourteen instructional outlines for use in a course to train novice firemen, this guide covers the topic of rescue operations. Two types of rescue functions are recognized: the primary one consists of locating and saving trapped victims, and the secondary one of recovering bodies and making the area safe for other workers and equipment. The circumstances in which victims may be found and the techniques of carrying them to safety are described, and the precautions that the fireman should take for his personal protection are listed. This outline is to be used in conjunction with the International Fire Service Training Association's manual, "Fire Service Rescue and Protective Breathing Practices" (see note). (An outline of the whole course covering all fourteen topics briefly is provided in the first volume of the set--CE 016 662.) (EIG)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED159342

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Elsie Bombeck

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND THE ERIC SYSTEM CONTRACTORS."

RESCUE PRACTICES

PURPOSE AND SCOPE

The responsibility of the fire service is to protect the life and property of citizens against hazards due to fire, explosion, storm, earthquake, and any other occurrence that seriously disrupts normal conditions. Rescue work is an important function of the fire service and the purpose of this outline is to serve as a guide for good practices in the careful removal of people from any one of the hazardous situations named above to a point of safety.

Rescue work is considered a special type of work in the fire service. Yet, it is of such importance that all firemen should train for this special duty in order to be able to cope with emergency situations that endanger human life.

The scope of this outline covers rescue work as two types of activities which usually are performed separately. These are designated as primary functions and secondary functions.

This outline was developed to be used in conjunction with the International Fire Service Training Association Manual, Fire Service Rescue and Protective Breathing Practices.

AIM

To present information and techniques of rescue operations that are necessary to remove human beings from situations which prohibit their unassisted escape.

COURSE OUTLINE	GUIDES

I. Primary Functions.

A. Locating and freeing victims of hazardous incidents.

B. Conveying victims to a safe place.

C. Rendering essential first aid to victims.

II. Secondary Functions.

A. Recovering and removing human bodies.

B. Making the area safe for rescue workers.

1. Shore structures to prevent further sinking, sagging or falling.

2. Demolish dangerous structures.

3. Correct other hazardous conditions for public safety.

C. To assist public utility personnel.

1. Roping of area.

2. Providing lights.

D. Enlistment of special equipment to remove hazardous debris.

1. Cranes.

2. Bull-dozers.

3. Trucks.

COURSE OUTLINE	GUIDES

III. Incidents and Situations Involving Rescue Work.

A. Types of buildings.

1. Burning buildings.

(a) Hospitals and convalescent homes.

(b) Public gathering places.

(c) Hotels and motels.

(d) Apartment houses.

(e) Office buildings.

(f) Industrial buildings.

(g) Private residences.

2. Demolished buildings.

(a) Due to explosion.

(b) Collapse due to structural failure.

B. Gaseous areas.

NOTE: Instructor should give description of rescue situations created by each gas type.

1. Industrial gases.

(a) Fuel gases.

(1) Natural.

COURSE OUTLINE	GUIDES
(2) Liquified petroleum. (3) Artificial. (b) Refrigerants. (c) Fumigants. (d) Anesthetics. (e) Processing gases. 2. Fire gases - encountered most frequently where a fire has smouldered and gases have no chance to escape. Protective breathing equipment must be worn. (a) Smoke. (b) Carbon dioxide. (c) Carbon monoxide. (d) Nitrogen oxide from burning materials. 3. Gases from decomposition. (a) Decomposition of organic material. (1) Plant matter. (2) Animal matter. (b) Sewer gas - mixture of several flammable or noxious gases.	

COURSE OUTLINE	GUIDES
C. Electrical contact. 1. Coming in contact with electricity either by direct or indirect means. 2. Use caution in rescue of victims in contact with electricity. D. Earth cave-ins. 1. Ditching. 2. Excavating. 3. Tunneling. E. Water accidents. F. Storms and floods. G. Transportation accidents. H. Forest fires. I. Panics. J. Other accidental occurrences. 1. Open sewer manholes. 2. Slippery streets. 3. Scaffolding accidents and other falls. IV. Personal Protection Requirements. A. Fire fighters must protect themselves against.	

COURSE OUTLINE	GUIDES
1. Weather. 2. Extinguishing agents. 3. Heat. 4. Accident causes.	
B. Complete regulation fire fighting clothing provides minimum body protection, but many situations may require special and added body protection. 1. Helmet. 2. Face and eye protection. 3. Bunker coats. 4. Bunker pants. 5. Gloves. 6. Boots (steel insoles).	
C. United States Department of Transportation shipping labels for packages containing dangerous materials. 1. Red label with black printing (size 4" x 4"). (a) Flammable liquids (diamond shape). (b) Compressed flammable gases (diamond shape). (c) Special fireworks (square). (d) Samples of explosives (square).	Fire Service Rescue & Protective Breathing Practices, P. 17-24

COURSE OUTLINE	GUIDES
(e) Propellent explosives (square). 2. White label with black printing (size 4" x 4"). (a) Acids (diamond shape). (b) Corrosive liquids (diamond shape). (c) Alkaline caustic liquids (diamond shape). (d) Radioactive materials (diamond shape) (Group I). 3. White label with red printing (size 4" x 4"). (a) Poison gas (diamond shape). (b) Poison (diamond shape). (c) Tear gas (diamond shape). 4. White and yellow labels with black printing (size 4" x 4"). (a) Radioactive materials (diamond shape) (Group II). (b) Radioactive materials (diamond shape) (Group III). 5. Yellow label with black printing (size 4" x 4") - flammable solids and oxidizing materials (diamond shape). 6. Green label with black printing (size 4" x 4") - non-flammable compressed gas (diamond shape). -6-	

COURSE OUTLINE	GUIDES
D. Using protective breathing equipment.	
NOTE: Reference should be made to outline on breathing equipment.	
V. Pre-rescue Planning.	Fire Service Rescue & Protective Breathing Practices, P. 122
NOTE: Instructor should discuss fully "System of Survey".	
A. Sizing up the situation.	
1. Anticipating conditions.	
(a) Probable life hazard.	
(b) Development of fire.	
2. Facts of situation.	
(a) Time and conditions.	
(b) Situations.	
(c) Contributing factors.	
3. Weighing facts.	
(a) Rescue requirements.	
(b) Equipment and manpower.	
(c) Additional assistance and mutual aid.	
B. Determining rescue procedures.	

COURSE OUTLINE	GUIDES
1. Immediate action.	
2. Course of action.	
C. Guides to point out during pre-rescue planning.	
1. Rescue victims who can be seen and heard.	
2. Locate victims in an orderly manner.	
3. Use caution while moving around to avoid further building collapse.	
4. Trapped victims may be located by calling or tapping on pipes or other objects.	
5. Rescuers avoid unnecessary talking or yelling.	
6. Listen for moans or muffled sounds.	
7. Rescue workers should work in pairs.	
VI. Rescue Circumstances.	
A. Conditions in which victims may be found.	
1. Trapped.	
(a) Surface trapped.	
(b) Lightly trapped.	
(c) Heavily trapped.	
2. Pinned.	
3. Injured.	

COURSE OUTLINE	GUIDES

4. Burned.

5. Unconscious.

6. Semi-conscious.

7. In shock.

8. Sleeping.

9. Intoxicated.

10. Bedfast.

11. Panicky.

B. Reaching trapped victims.

1. In a burning building.

(a) Safety precautions.

(1) Wear protective clothing and breathing equipment.

(2) Use rope hand lines for signaling.

a. Two pulls - advance.

b. Three pulls - retreat, come out at once.

c. Four pulls - distress, need help.

(3) Work in pairs.

COURSE OUTLINE	GUIDES
(b) Rescue aids.	
(1) "Walkie-talkie".	
(2) Portable phone.	
(3) Fire department equipment.	
a. Hose lines.	
b. ladders.	
2. In a demolished building.	
(a) Rescue is complicated and requires more time.	Fire Service Rescue & Protective Breathin Practices, P. 128, 129, Fig. 61, 62 & 63
(b) Access is restricted by position of.	
(1) Heavy beams.	
(2) Collapsed walls.	
(3) Collapsed floor or roof sections.	
(4) Piles of debris.	
3. Types of collapse and formation of void.	
(a) Lean-to floor collapse.	
(b) "Pan-cake" floor collapse.	
(c) V-shape or V-type floor collapse.	

COURSE OUTLINE	GUIDES
4. Tunneling (horizontal, vertical or diagonal).	
(a) Slow dangerous work.	
(b) Use as last resort.	
(c) Carried out from lowest possible level.	
5. Shoring - only temporary shoring should be done by rescue squads.	Fire Service Rescue & Protective Breathing Practices, P. 130, Fig. 64
C. Gaseous area.	
D. In contact with electrical energy.	
E. Earth openings.	
F. Under water.	Fire Service Rescue & Protective Breathing Practices, P. 135, 139, 140, 141, Fig. 65, 67, 68 & 69
1. Planning.	
2. Using scuba equipment.	
3. The search.	
G. Storms and floors.	
H. Transportation accidents.	
I. Forest and brush fires.	
J. Panics.	
K. Other accidental occurrences.	

COURSE OUTLINE	GUIDES
VII. Rescue Practices and Techniques.	
NOTE: Rescue practices and techniques consist of jobs and operations necessary to carry out a rescue.	
A. Assisting victim to walk.	Fire Service Rescue & Protective Breathing Practices, P. 94, Fig. 39
1. One-man method.	
(a) Place victim's uninjured arm over rescuer's shoulder and behind his neck.	
(b) Rescuer grasps victim's hand and passes his other arm around his waist.	
(c) Assist slightly injured victim to walk.	
2. Two-man method.	Fire Service Rescue & Protective Breathing Practices, P. 94, Fig. 40
(a) Victim puts an arm over the shoulder and behind the nect of either rescuer.	
(b) Each rescuer grasps victim's hand and passes his other arm around his waist.	
(c) Assist victim to walk, or practically all weight of victim can be borne by rescuers.	
B. Carrying a victim.	
1. Astride the back (one-man).	
(a) Assist victim to standing position.	
(b) Turn back to victim.	

COURSE OUTLINE	GUIDES
(c) Take victim's arms over shoulders and cross them.	
(d) Bend forward and raise victim well upon back.	
(e) Pass forearms under victim's legs and take a wrist in either hand.	
2. Pack-strap method (one-man carry for unconscious victim).	Fire Service Rescue & Protective Breathing Practices, P. 96, Fig. 42
(a) Rescuer makes loop of any convenient material.	
(b) Turn victim on his stomach and pass loop around his chest at the armpits.	
(c) Rescuer places himself on his back flat on the victim and slips each arm through loop ends.	
(d) Rescuer rolls himself and victim over onto his hands and knees, then gets to his feet with victim secured to his back.	
3. Seat carry (two-man).	Fire Service Rescue & Protective Breathing Practices, P. 97, Fig. 43
(a) Rescuers kneel, one on either side of victim, near victim's hips and raise him to a sitting position.	
(b) Rescuers steady victim and place arms nearest his head around his back, clasping the shoulder of the other.	

COURSE OUTLINE	GUIDES
(c) Rescuers slip the other arm under victim's thighs, clasping the wrist of the other.	
(d) Rescuers arise slowly together, lifting the victim from the ground.	
4. Three-man carry.	Fire Service Rescue & Protective Breathing Practices, P. 99, 100, 101, Fig. 46
(a) Three men line up on one side of victim.	
(b) At command "prepare to lift", each man kneels on knee nearest victim's feet.	
(c) Without further orders, rescuers pass hand and forearms under victim.	
(1) Head man - under neck and back.	
(2) Middle man - under pelvis and knees.	
(3) Foot man - under knees and ankles.	
(d) At command "lift", they raise victim and place him on their knees.	
(e) At command "prepare to raise", they slowly turn victim on his side toward them until he rests in the bend of the elbows.	
(f) At command "rise", all rise to a standing position holding victim against their chests.	
5. Arm cradle carry (one-man).	Fire Service Rescue & Protective Breathing Practices P. 98, Fig. 44 & 45
6. Extremities carry (two-man).	

COURSE OUTLINE	GUIDES
7. Chair carry (two-man).	
C. Dragging a victim (one-man).	Fire Service Rescue & Protective Breathing Practices, P. 102, Fig. 47
1. Incline drag.	
(a) Place victim on back, head downward.	
(b) Crouch at victim's head and grasp him under armpits.	
(c) Victim's head is supported in the crook of rescuer's arms.	
2. Mattress splint technique (two-man).	Fire Service Rescue & Protective Breathing Practices, P. 103, Fig. 48
(a) Rescuers fold the sides of a mattress along each side of patient.	
(b) Sides of mattress are secured in place by two twisted sheets, one tied around mattress at patient's chest, the other at patient's knees.	
(c) Lift mattress and patient to floor and drag him to safety.	
3. The firemen's drag.	P. 104, Fig. 49
4. Blanket drag.	P. 105, Fig. 50
D. Stretcher transportation - for severely injured victims.	
1. Types of stretchers used.	

COURSE OUTLINE	GUIDES
(a) Army stretcher.	
(b) Folding stretcher.	
(c) Strokes navy stretcher.	
(d) Improvised stretchers.	
(1) Using two poles and two or three jackets.	
(2) Using two poles and blanket or salvage cover.	
(3) Ladder.	
2. Placing victim on stretcher.	Fire Service Rescue & Protective Breathing Practices, P. 109-110, Fig. 54
(a) Raise victim in same manner as described in three-man carry.	
(b) Gently lower victim to stretcher by reversing lifting procedure.	
3. Carrying a stretcher.	P. 111, Fig. 55-57
E. Lowering and raising a victim (where rescue through natural exits are blocked).	
1. Assisting a victim down a ladder.	P. 95, Fig. 41
(a) Rescuer proceeds below the victim.	
(b) Place arms around victim underneath armpits.	
(c) Keep one knee placed between victim's legs.	

COURSE OUTLINE	GUIDES
(d) If victim becomes unconscious, his feet and hands should ride outside beams of ladder.	
2. Lowering victim via ladder and lifeline.	P. 82, Fig. 27
(a) Raise ladder to a point above window where rescue is to be made.	
(b) Pass line under bottom rung.	
(c) Rescuer climbs, feeding line to underside of ladder.	
(d) When rescuer reaches bottom of window sill, line is threaded back through rungs, up and over three consecutive rungs.	
(e) Enough line is then fed through the window where the tie is made.	
(f) Victim is then swung from window and lowered by men on ground.	
3. Rescue knots.	Fire Service Rescue & Protective Breathing Practices, P. 66-69, Fig. 17
NOTE: Refer to ROPE PRACTICES for specific instructions.	
(a) Bowline-on-a-bight.	
(b) Double bowline.	P. 70-73, Fig. 18
(c) Butterfly knot.	P. 74-76, Fig. 19
4. Lashing victims for lowering or raising.	

COURSE OUTLINE	GUIDES
(a) Lashing victim on stretcher.	P. 77, Fig. 20 & 21
(1) Wrap victim in blankets or salvage cover and place on stretcher.	P. 81, Fig. 25
(2) Using a lashing rope, start with a clove hitch on one of stretcher handles nearest head.	
(3) Pass the rope down one side of the stretcher.	
(4) Take a complete turn underneath and back over victim's chest, making a half hitch at the side.	
(5) Take a complete turn underneath and back over victim's hips, making a half hitch at the side.	
(6) Take a complete turn underneath and back over just below victim's knees, making a half hitch at the side.	
(7) Pass rope around victim's feet and up opposite side of stretcher, making a half hitch at each turn.	
(8) Secure with clove hitch on opposite handle.	
(b) Lashing victim on improvised stretcher (ladder).	Fire Service Rescue & Protective Breathing Practices, P. 81, Fig. 25
(1) Wrap victim in blankets or salvage cover and place on ladder.	

COURSE OUTLINE	GUIDES
(2) Using a lashing rope, start with clove hitch on beam of ladder one rung above victim's head.	
(3) Taking complete turns underneath and back over victim, make half hitches at victim's chest, hips, and below the knees.	
(4) Pass rope between victim's feet and make two additional half hitches around ladder.	
(5) Secure with clove hitch on rung below victim's feet.	
5. Methods of lowering victims on stretchers or improvised stretchers.	
NOTE: Instructor should demonstrate techniques and tools used.	Rescue & Protective Breathing Practices, P. 79, 88, Fig. 24
(a) Horizontal.	
(1) One-point suspension method.	P. 78, Fig. 22
(2) Four-point suspension method.	P. 78, Fig. 23
(b) Vertical.	P. 81, 82, Fig. 25, 26
F. Water rescue.	
1. The ladder float drag.	P. 106, Fig. 51
2. The fire hose drag.	P. 107, Fig. 52

COURSE OUTLINE	GUIDES
G. Other means of escape (descending).	
1. Life belt and lifeline.	Rescue & Protective Breathing Practices, P. 90-92, Fig. 33-38
2. Life net.	P. 112-116, Fig. 57-60
3. Improvised fire escape.	P. 83-86, Fig. 28
H. Raising and lowering devices.	
1. The aerial ladder.	
2. The elevating platforms.	
3. The jib.	P. 89, Fig. 30
4. Rescue kit hoist.	P. 88, Fig. 29
5. The gin pole.	P. 89, Fig. 32
6. A-frame.	P. 89, Fig. 32